

## SEQUENCE LISTING

<110> Mulroy, Robert  
Lindsay, Stace

<120> USE OF rAFP TO INHIBIT OR PREVENT  
APOPTOSIS

<130> 06727/010002

<150> PCT/US00/24129

<151> 2000-09-01

<150> US 60/152,166

<151> 1999-09-02

<160> 8

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 2027

<212> DNA

<213> Homo sapiens

<400> 1

atattgtgct	tccaccactg	ccaataacaa	aataactagc	aaccatgaag	tgggtggaat	60
caattttttt	aatttttcta	ctaaatttta	ctgaatccag	aacactgcat	agaaatgaat	120
atggaatagc	ttccatattg	gattcttacc	aatgtactgc	agagataagt	ttagctgacc	180
tggctaccat	atTTTTTgCc	cagtttgTtc	aagaagccac	ttacaaggaa	gtaagcaaaa	240
tggtgaaaga	tgcattgact	gcaattgaga	aaccactggg	agatgaacag	tcttcagggt	300
gtttagaaaa	ccagctacct	gcctttctgg	aagaactttg	ccatgagaaa	gaaatttttg	360
agaagtacgg	acattcagac	tgctgcagcc	aaagtgaaga	gggaagacat	aactgttttc	420
ttgcacacaa	aaagcccact	gcagcatgga	tcccactttt	ccaagttcca	gaacctgtca	480
caagctgtga	agcatatgaa	gaagacaggg	agacattcat	gaacaaattc	atttatgaga	540
tagcaagaag	gcatcccttc	ctgtatgcac	ctacaattct	tctttcggct	gctgggtatg	600
agaaaataat	tccatcttgc	tgcaaagctg	aaaatgcagt	tgaatgcttc	caaacaaagg	660
cagcaacagt	tacaaaagaa	ttaagagaaa	gcagcttggt	aaatcaacat	gcatgtccag	720
taatgaaaaa	ttttgggacc	cgaacttttc	aagccataac	tgttactaaa	ctgagtcaga	780
agttttacca	agtttaattt	actgaaatcc	agaaactagt	cctggatgtg	gccccatgtc	840
atgagcactg	ttgcagagca	gatgtgctgg	attgtctgca	ggatggggaa	aaaatcatgt	900
cctacatatg	ttctcaacaa	gacactctgt	caaacaaaat	aacagaatgc	tgcaaactga	960
ccacgctgga	acgtgggtcaa	tgtataattc	atgcagaaaa	tgatgaaaaa	cctgaaggtc	1020
tatctccaaa	tctaaacagg	tttttaggag	atagagattt	taaccaattt	tcttcagggg	1080
aaaaaaatat	cttcttgcca	agttttgttc	atgaatattc	aagaagacat	cctcagcttg	1140
ctgtctcagt	aattctaaga	gttgctaaag	gataaccagga	gttattggag	aagtgtttcc	1200
agactgaaaa	ccctcttgaa	tgccaagata	aaggagaaga	agaattacag	aaatacatcc	1260
aggagagcca	agcattggca	aagcgaagct	gcggcctctt	ccagaaacta	ggagaatatt	1320
acttacaaaa	tgagttttct	gttgcttaca	caaagaaagc	ccccagctg	acctcgctcg	1380
agctgatggc	catcaccaga	aaaatggcag	ccacagcagc	cacttggtgc	caactcagtg	1440
aggacaaact	attggcctgt	ggcgagggag	cggctgacat	tattatcgga	cacttatgta	1500
tcagacatga	aatgaactca	gtaaaccctg	gtgttgccca	gtgctgcact	tcttcatatg	1560
ccaacaggag	gccatgcttc	agcagcttgg	tggtggatga	aacatatgtc	cctcctgcat	1620
tctctgatga	caagttcatt	ttccataaag	atctgtgccca	agctcagggg	gtagcgctgc	1680
aaaggatgaa	gcaagagttt	ctcatthaacc	ttgtgaagca	aaagccacaa	ataacagagg	1740
aacaacttga	ggctctcatt	gcagattttct	caggcctgtt	ggagaaatgc	tgccaaggcc	1800
aggaacagga	agtctgcttt	gctgaagagg	gacaaaaaact	gattttcaaaa	actgggtgctg	1860
ctttggggagt	ttaaattact	tcagggggaag	agaagacaaa	acgagtcttt	cattcggtgtg	1920

gaacttttct ctttaatttt aactgattta acactttttg tgaattaatg aaatgataaa 1980  
gacttttatg tgagatttcc ttatcacaga aataaaatat ctccaaa 2027

<210> 2  
<211> 590  
<212> PRT  
<213> Homo sapiens

<400> 2  
Thr Leu His Arg Asn Glu Tyr Gly Ile Ala Ser Ile Leu Asp Ser Tyr  
1 5 10 15  
Gln Cys Thr Ala Glu Ile Ser Leu Ala Asp Leu Ala Thr Ile Phe Phe  
20 25 30  
Ala Gln Phe Val Gln Glu Ala Thr Tyr Lys Glu Val Ser Lys Met Val  
35 40 45  
Lys Asp Ala Leu Thr Ala Ile Glu Lys Pro Thr Gly Asp Glu Gln Ser  
50 55 60  
Ser Gly Cys Leu Glu Asn Gln Leu Pro Ala Phe Leu Glu Glu Leu Cys  
65 70 75 80  
His Glu Lys Glu Ile Leu Glu Lys Tyr Gly His Ser Asp Cys Cys Ser  
85 90 95  
Gln Ser Glu Glu Gly Arg His Asn Cys Phe Leu Ala His Lys Lys Pro  
100 105 110  
Thr Ala Ala Trp Ile Pro Leu Phe Gln Val Pro Glu Pro Val Thr Ser  
115 120 125  
Cys Glu Ala Tyr Glu Glu Asp Arg Glu Thr Phe Met Asn Lys Phe Ile  
130 135 140  
Tyr Glu Ile Ala Arg Arg His Pro Phe Leu Tyr Ala Pro Thr Ile Leu  
145 150 155 160  
Leu Ser Ala Ala Gly Tyr Glu Lys Ile Ile Pro Ser Cys Cys Lys Ala  
165 170 175  
Glu Asn Ala Val Glu Cys Phe Gln Thr Lys Ala Ala Thr Val Thr Lys  
180 185 190  
Glu Leu Arg Glu Ser Ser Leu Leu Asn Gln His Ala Cys Pro Val Met  
195 200 205  
Lys Asn Phe Gly Thr Arg Thr Phe Gln Ala Ile Thr Val Thr Lys Leu  
210 215 220  
Ser Gln Lys Phe Thr Lys Val Asn Phe Thr Glu Ile Gln Lys Leu Val  
225 230 235 240  
Leu Asp Val Ala His Val His Glu His Cys Cys Arg Ala Asp Val Leu  
245 250 255  
Asp Cys Leu Gln Asp Gly Glu Lys Ile Met Ser Tyr Ile Cys Ser Gln  
260 265 270  
Gln Asp Thr Leu Ser Asn Lys Ile Thr Glu Cys Cys Lys Leu Thr Thr  
275 280 285  
Leu Glu Arg Gly Gln Cys Ile Ile His Ala Glu Asn Asp Glu Lys Pro  
290 295 300  
Glu Gly Leu Ser Pro Asn Leu Asn Arg Phe Leu Gly Asp Arg Asp Phe  
305 310 315 320  
Asn Gln Phe Ser Ser Gly Glu Lys Asn Ile Phe Leu Ala Ser Phe Val  
325 330 335  
His Glu Tyr Ser Arg Arg His Pro Gln Leu Ala Val Ser Val Ile Leu  
340 345 350  
Arg Val Ala Lys Gly Tyr Gln Glu Leu Leu Glu Lys Cys Phe Gln Thr  
355 360 365  
Glu Asn Pro Leu Glu Cys Gln Asp Lys Gly Glu Glu Glu Leu Gln Lys  
370 375 380  
Tyr Ile Gln Glu Ser Gln Ala Leu Ala Lys Arg Ser Cys Gly Leu Phe  
385 390 395 400

Gln	Lys	Leu	Gly	Glu	Tyr	Tyr	Leu	Gln	Asn	Glu	Phe	Leu	Val	Ala	Tyr
				405					410					415	
Thr	Lys	Lys	Ala	Pro	Gln	Leu	Thr	Ser	Ser	Glu	Leu	Met	Ala	Ile	Thr
			420					425					430		
Arg	Lys	Met	Ala	Ala	Thr	Ala	Ala	Thr	Cys	Cys	Gln	Leu	Ser	Glu	Asp
		435					440					445			
Lys	Leu	Leu	Ala	Cys	Gly	Glu	Gly	Ala	Ala	Asp	Ile	Ile	Ile	Gly	His
	450					455					460				
Leu	Cys	Ile	Arg	His	Glu	Met	Thr	Pro	Val	Asn	Pro	Gly	Val	Gly	Gln
465					470					475					480
Cys	Cys	Thr	Ser	Ser	Tyr	Ala	Asn	Arg	Arg	Pro	Cys	Phe	Ser	Ser	Leu
			485					490						495	
Val	Val	Asp	Glu	Thr	Tyr	Val	Pro	Pro	Ala	Phe	Ser	Asp	Asp	Lys	Phe
			500					505					510		
Ile	Phe	His	Lys	Asp	Leu	Cys	Gln	Ala	Gln	Gly	Val	Ala	Leu	Gln	Arg
		515					520					525			
Met	Lys	Gln	Glu	Phe	Leu	Ile	Asn	Leu	Val	Lys	Gln	Lys	Pro	Gln	Ile
	530					535					540				
Thr	Glu	Glu	Gln	Leu	Glu	Ala	Leu	Ile	Ala	Asp	Phe	Ser	Gly	Leu	Leu
545					550					555					560
Glu	Lys	Cys	Cys	Gln	Gly	Gln	Glu	Gln	Glu	Val	Cys	Phe	Ala	Glu	Glu
				565					570					575	
Gly	Gln	Lys	Leu	Ile	Ser	Lys	Thr	Gly	Ala	Ala	Leu	Gly	Val		
			580					585					590		

<210> 3  
 <211> 197  
 <212> PRT  
 <213> Homo sapiens

<400> 3

Thr	Leu	His	Arg	Asn	Glu	Tyr	Gly	Ile	Ala	Ser	Ile	Leu	Asp	Ser	Tyr
1				5					10					15	
Gln	Cys	Thr	Ala	Glu	Ile	Ser	Leu	Ala	Asp	Leu	Ala	Thr	Ile	Phe	Phe
			20					25					30		
Ala	Gln	Phe	Val	Gln	Glu	Ala	Thr	Tyr	Lys	Glu	Val	Ser	Lys	Met	Val
		35					40					45			
Lys	Asp	Ala	Leu	Thr	Ala	Ile	Glu	Lys	Pro	Thr	Gly	Asp	Glu	Gln	Ser
	50					55					60				
Ser	Gly	Cys	Leu	Glu	Asn	Gln	Leu	Pro	Ala	Phe	Leu	Glu	Glu	Leu	Cys
65					70					75					80
His	Glu	Lys	Glu	Ile	Leu	Glu	Lys	Tyr	Gly	His	Ser	Asp	Cys	Cys	Ser
			85						90				95		
Gln	Ser	Glu	Glu	Gly	Arg	His	Asn	Cys	Phe	Leu	Ala	His	Lys	Lys	Pro
			100					105					110		
Thr	Ala	Ala	Trp	Ile	Pro	Leu	Phe	Gln	Val	Pro	Glu	Pro	Val	Thr	Ser
		115					120					125			
Cys	Glu	Ala	Tyr	Glu	Glu	Asp	Arg	Glu	Thr	Phe	Met	Asn	Lys	Phe	Ile
	130					135					140				
Tyr	Glu	Ile	Ala	Arg	Arg	His	Pro	Phe	Leu	Tyr	Ala	Pro	Thr	Ile	Leu
145					150					155					160
Leu	Ser	Ala	Ala	Gly	Tyr	Glu	Lys	Ile	Ile	Pro	Ser	Cys	Cys	Lys	Ala
			165						170					175	
Glu	Asn	Ala	Val	Glu	Cys	Phe	Gln	Thr	Lys	Ala	Ala	Thr	Val	Thr	Lys
			180					185					190		
Glu	Leu	Arg	Glu	Ser											
			195												

<210> 4  
 <211> 192  
 <212> PRT  
 <213> Homo sapiens

<400> 4  
 Ser Leu Leu Asn Gln His Ala Cys Pro Val Met Lys Asn Phe Gly Thr  
 1 5 10 15  
 Arg Thr Phe Gln Ala Ile Thr Val Thr Lys Leu Ser Gln Lys Phe Thr  
 20 25 30  
 Lys Val Asn Phe Thr Glu Ile Gln Lys Leu Val Leu Asp Val Ala His  
 35 40 45  
 Val His Glu His Cys Cys Arg Ala Asp Val Leu Asp Cys Leu Gln Asp  
 50 55 60  
 Gly Glu Lys Ile Met Ser Tyr Ile Cys Ser Gln Gln Asp Thr Leu Ser  
 65 70 75 80  
 Asn Lys Ile Thr Glu Cys Cys Lys Leu Thr Thr Leu Glu Arg Gly Gln  
 85 90 95  
 Cys Ile Ile His Ala Glu Asn Asp Glu Lys Pro Glu Gly Leu Ser Pro  
 100 105 110  
 Asn Leu Asn Arg Phe Leu Gly Asp Arg Asp Phe Asn Gln Phe Ser Ser  
 115 120 125  
 Gly Glu Lys Asn Ile Phe Leu Ala Ser Phe Val His Glu Tyr Ser Arg  
 130 135 140  
 Arg His Pro Gln Leu Ala Val Ser Val Ile Leu Arg Val Ala Lys Gly  
 145 150 155 160  
 Tyr Gln Glu Leu Leu Glu Lys Cys Phe Gln Thr Glu Asn Pro Leu Glu  
 165 170 175  
 Cys Gln Asp Lys Gly Glu Glu Glu Leu Gln Lys Tyr Ile Gln Glu Ser  
 180 185 190

<210> 5  
 <211> 201  
 <212> PRT  
 <213> Homo sapiens

<400> 5  
 Gln Ala Leu Ala Lys Arg Ser Cys Gly Leu Phe Gln Lys Leu Gly Glu  
 1 5 10 15  
 Tyr Tyr Leu Gln Asn Glu Phe Leu Val Ala Tyr Thr Lys Lys Ala Pro  
 20 25 30  
 Gln Leu Thr Ser Ser Glu Leu Met Ala Ile Thr Arg Lys Met Ala Ala  
 35 40 45  
 Thr Ala Ala Thr Cys Cys Gln Leu Ser Glu Asp Lys Leu Leu Ala Cys  
 50 55 60  
 Gly Glu Gly Ala Ala Asp Ile Ile Ile Gly His Leu Cys Ile Arg His  
 65 70 75 80  
 Glu Met Thr Pro Val Asn Pro Gly Val Gly Gln Cys Cys Thr Ser Ser  
 85 90 95  
 Tyr Ala Asn Arg Arg Pro Cys Phe Ser Ser Leu Val Val Asp Glu Thr  
 100 105 110  
 Tyr Val Pro Pro Ala Phe Ser Asp Lys Phe Ile Phe His Lys Asp  
 115 120 125  
 Leu Cys Gln Ala Gln Gly Val Ala Leu Gln Arg Met Lys Gln Glu Phe  
 130 135 140  
 Leu Ile Asn Leu Val Lys Gln Lys Pro Gln Ile Thr Glu Glu Gln Leu  
 145 150 155 160  
 Glu Ala Leu Ile Ala Asp Phe Ser Gly Leu Leu Glu Lys Cys Cys Gln

				165					170					175			
Gly	Gln	Glu	Gln	Glu	Val	Cys	Phe	Ala	Glu	Glu	Gly	Gln	Lys	Leu	Ile		
			180					185					190				
Ser	Lys	Thr	Gly	Ala	Ala	Leu	Gly	Val									
		195					200										

<210> 6  
 <211> 389  
 <212> PRT  
 <213> Homo sapiens

<400> 6

Thr	Leu	His	Arg	Asn	Glu	Tyr	Gly	Ile	Ala	Ser	Ile	Leu	Asp	Ser	Tyr		
1				5					10					15			
Gln	Cys	Thr	Ala	Glu	Ile	Ser	Leu	Ala	Asp	Leu	Ala	Thr	Ile	Phe	Phe		
			20					25					30				
Ala	Gln	Phe	Val	Gln	Glu	Ala	Thr	Tyr	Lys	Glu	Val	Ser	Lys	Met	Val		
		35					40					45					
Lys	Asp	Ala	Leu	Thr	Ala	Ile	Glu	Lys	Pro	Thr	Gly	Asp	Glu	Gln	Ser		
	50					55					60						
Ser	Gly	Cys	Leu	Glu	Asn	Gln	Leu	Pro	Ala	Phe	Leu	Glu	Glu	Leu	Cys		
65					70					75					80		
His	Glu	Lys	Glu	Ile	Leu	Glu	Lys	Tyr	Gly	His	Ser	Asp	Cys	Cys	Ser		
				85					90					95			
Gln	Ser	Glu	Glu	Gly	Arg	His	Asn	Cys	Phe	Leu	Ala	His	Lys	Lys	Pro		
			100					105					110				
Thr	Ala	Ala	Trp	Ile	Pro	Leu	Phe	Gln	Val	Pro	Glu	Pro	Val	Thr	Ser		
		115					120						125				
Cys	Glu	Ala	Tyr	Glu	Glu	Asp	Arg	Glu	Thr	Phe	Met	Asn	Lys	Phe	Ile		
	130					135					140						
Tyr	Glu	Ile	Ala	Arg	Arg	His	Pro	Phe	Leu	Tyr	Ala	Pro	Thr	Ile	Leu		
145					150					155					160		
Leu	Ser	Ala	Ala	Gly	Tyr	Glu	Lys	Ile	Ile	Pro	Ser	Cys	Cys	Lys	Ala		
				165					170					175			
Glu	Asn	Ala	Val	Glu	Cys	Phe	Gln	Thr	Lys	Ala	Ala	Thr	Val	Thr	Lys		
			180					185					190				
Glu	Leu	Arg	Glu	Ser	Ser	Leu	Leu	Asn	Gln	His	Ala	Cys	Pro	Val	Met		
	195						200					205					
Lys	Asn	Phe	Gly	Thr	Arg	Thr	Phe	Gln	Ala	Ile	Thr	Val	Thr	Lys	Leu		
	210					215					220						
Ser	Gln	Lys	Phe	Thr	Lys	Val	Asn	Phe	Thr	Glu	Ile	Gln	Lys	Leu	Val		
225					230					235					240		
Leu	Asp	Val	Ala	His	Val	His	Glu	His	Cys	Cys	Arg	Ala	Asp	Val	Leu		
				245					250					255			
Asp	Cys	Leu	Gln	Asp	Gly	Glu	Lys	Ile	Met	Ser	Tyr	Ile	Cys	Ser	Gln		
		260						265					270				
Gln	Asp	Thr	Leu	Ser	Asn	Lys	Ile	Thr	Glu	Cys	Cys	Lys	Leu	Thr	Thr		
		275					280						285				
Leu	Glu	Arg	Gly	Gln	Cys	Ile	Ile	His	Ala	Glu	Asn	Asp	Glu	Lys	Pro		
	290					295					300						
Glu	Gly	Leu	Ser	Pro	Asn	Leu	Asn	Arg	Phe	Leu	Gly	Asp	Arg	Asp	Phe		
305					310					315					320		
Asn	Gln	Phe	Ser	Ser	Gly	Glu	Lys	Asn	Ile	Phe	Leu	Ala	Ser	Phe	Val		
				325					330					335			
His	Glu	Tyr	Ser	Arg	Arg	His	Pro	Gln	Leu	Ala	Val	Ser	Val	Ile	Leu		
			340					345					350				
Arg	Val	Ala	Lys	Gly	Tyr	Gln	Glu	Leu	Leu	Glu	Lys	Cys	Phe	Gln	Thr		
		355					360					365					

Glu Asn Pro Leu Glu Cys Gln Asp Lys Gly Glu Glu Glu Leu Gln Lys  
 370 375 380  
 Tyr Ile Gln Glu Ser  
 385

<210> 7  
 <211> 393  
 <212> PRT  
 <213> Homo sapiens

<400> 7  
 Ser Leu Leu Asn Gln His Ala Cys Pro Val Met Lys Asn Phe Gly Thr  
 1 5 10 15  
 Arg Thr Phe Gln Ala Ile Thr Val Thr Lys Leu Ser Gln Lys Phe Thr  
 20 25 30  
 Lys Val Asn Phe Thr Glu Ile Gln Lys Leu Val Leu Asp Val Ala His  
 35 40 45  
 Val His Glu His Cys Cys Arg Ala Asp Val Leu Asp Cys Leu Gln Asp  
 50 55 60  
 Gly Glu Lys Ile Met Ser Tyr Ile Cys Ser Gln Gln Asp Thr Leu Ser  
 65 70 75 80  
 Asn Lys Ile Thr Glu Cys Cys Lys Leu Thr Thr Leu Glu Arg Gly Gln  
 85 90 95  
 Cys Ile Ile His Ala Glu Asn Asp Glu Lys Pro Glu Gly Leu Ser Pro  
 100 105 110  
 Asn Leu Asn Arg Phe Leu Gly Asp Arg Asp Phe Asn Gln Phe Ser Ser  
 115 120 125  
 Gly Glu Lys Asn Ile Phe Leu Ala Ser Phe Val His Glu Tyr Ser Arg  
 130 135 140  
 Arg His Pro Gln Leu Ala Val Ser Val Ile Leu Arg Val Ala Lys Gly  
 145 150 155 160  
 Tyr Gln Glu Leu Leu Glu Lys Cys Phe Gln Thr Glu Asn Pro Leu Glu  
 165 170 175  
 Cys Gln Asp Lys Gly Glu Glu Glu Leu Gln Lys Tyr Ile Gln Glu Ser  
 180 185 190  
 Gln Ala Leu Ala Lys Arg Ser Cys Gly Leu Phe Gln Lys Leu Gly Glu  
 195 200 205  
 Tyr Tyr Leu Gln Asn Glu Phe Leu Val Ala Tyr Thr Lys Lys Ala Pro  
 210 215 220  
 Gln Leu Thr Ser Ser Glu Leu Met Ala Ile Thr Arg Lys Met Ala Ala  
 225 230 235 240  
 Thr Ala Ala Thr Cys Cys Gln Leu Ser Glu Asp Lys Leu Leu Ala Cys  
 245 250 255  
 Gly Glu Gly Ala Ala Asp Ile Ile Ile Gly His Leu Cys Ile Arg His  
 260 265 270  
 Glu Met Thr Pro Val Asn Pro Gly Val Gly Gln Cys Cys Thr Ser Ser  
 275 280 285  
 Tyr Ala Asn Arg Arg Pro Cys Phe Ser Ser Leu Val Val Asp Glu Thr  
 290 295 300  
 Tyr Val Pro Pro Ala Phe Ser Asp Asp Lys Phe Ile Phe His Lys Asp  
 305 310 315 320  
 Leu Cys Gln Ala Gln Gly Val Ala Leu Gln Arg Met Lys Gln Glu Phe  
 325 330 335  
 Leu Ile Asn Leu Val Lys Gln Lys Pro Gln Ile Thr Glu Glu Gln Leu  
 340 345 350  
 Glu Ala Leu Ile Ala Asp Phe Ser Gly Leu Leu Glu Lys Cys Cys Gln  
 355 360 365  
 Gly Gln Glu Gln Glu Val Cys Phe Ala Glu Glu Gly Gln Lys Leu Ile

370                      375                      380  
 Ser Lys Thr Gly Ala Ala Leu Gly Val  
 385                      390

<210> 8  
 <211> 325  
 <212> PRT  
 <213> Homo sapiens

<400> 8  
 Met Ser Tyr Ile Cys Ser Gln Gln Asp Thr Leu Ser Asn Lys Ile Thr  
 1                      5                      10                      15  
 Glu Cys Cys Lys Leu Thr Thr Leu Glu Arg Gly Gln Cys Ile Ile His  
                     20                      25                      30  
 Ala Glu Asn Asp Glu Lys Pro Glu Gly Leu Ser Pro Asn Leu Asn Arg  
                     35                      40                      45  
 Phe Leu Gly Asp Arg Asp Phe Asn Gln Phe Ser Ser Gly Glu Lys Asn  
 50                      55                      60  
 Ile Phe Leu Ala Ser Phe Val His Glu Tyr Ser Arg Arg His Pro Gln  
 65                      70                      75                      80  
 Leu Ala Val Ser Val Ile Leu Arg Val Ala Lys Gly Tyr Gln Glu Leu  
                     85                      90                      95  
 Leu Glu Lys Cys Phe Gln Thr Glu Asn Pro Leu Glu Cys Gln Asp Lys  
                     100                      105                      110  
 Gly Glu Glu Glu Leu Gln Lys Tyr Ile Gln Glu Ser Gln Ala Leu Ala  
                     115                      120                      125  
 Lys Arg Ser Cys Gly Leu Phe Gln Lys Leu Gly Glu Tyr Tyr Leu Gln  
 130                      135                      140  
 Asn Glu Phe Leu Val Ala Tyr Thr Lys Lys Ala Pro Gln Leu Thr Ser  
 145                      150                      155                      160  
 Ser Glu Leu Met Ala Ile Thr Arg Lys Met Ala Ala Thr Ala Ala Thr  
                     165                      170                      175  
 Cys Cys Gln Leu Ser Glu Asp Lys Leu Leu Ala Cys Gly Glu Gly Ala  
                     180                      185                      190  
 Ala Asp Ile Ile Ile Gly His Leu Cys Ile Arg His Glu Met Thr Pro  
                     195                      200                      205  
 Val Asn Pro Gly Val Gly Gln Cys Cys Thr Ser Ser Tyr Ala Asn Arg  
                     210                      215                      220  
 Arg Pro Cys Phe Ser Ser Leu Val Val Asp Glu Thr Tyr Val Pro Pro  
 225                      230                      235                      240  
 Ala Phe Ser Asp Asp Lys Phe Ile Phe His Lys Asp Leu Cys Gln Ala  
                     245                      250                      255  
 Gln Gly Val Ala Leu Gln Arg Met Lys Gln Glu Phe Leu Ile Asn Leu  
                     260                      265                      270  
 Val Lys Gln Lys Pro Gln Ile Thr Glu Glu Gln Leu Glu Ala Leu Ile  
                     275                      280                      285  
 Ala Asp Phe Ser Gly Leu Leu Glu Lys Cys Cys Gln Gly Gln Glu Gln  
                     290                      295                      300  
 Glu Val Cys Phe Ala Glu Glu Gly Gln Lys Leu Ile Ser Lys Thr Gly  
 305                      310                      315                      320  
 Ala Ala Leu Gly Val  
                     325